Ordering number : EN 1775A

Monolithic Linear IC

No.1775A

LA7851

CRT Display Synchronization Deflection Circuit

The LA7851 is a sync·deflection circuit IC dedicated to CRT display use. It can be connected to the LA7832,7833 (for vertical output use) to form a sync·deflection circuit that meets every requirement for CRT display use.
So far, ICs for color TV use have been applied to the sync·deflection circuit for CRT display use and general-purpose ICs such as one-shot multivibrator, inverter and a lot of transistors have been used to form the peripherals such as sync input interface, horizontal phase shifter. The LA7851 contains these peripherals on chip, has a wide vertical pull-in range of 20Hz, and adopts a stable circuit for horizontal oscillation from 15kHz to 100kHz aiming at improving the characteristics required for CRT display use.

Features

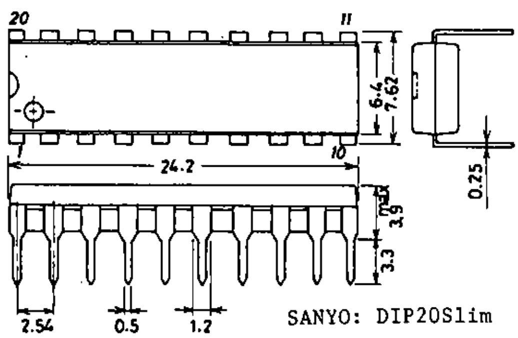
- The vertical pull-in range 20Hz permits non-adjusting at vertical sync 50Hz/60Hz.
- The horizontal oscillation frequency can be adjusted stably from 15kHz to 100kHz.
- The horizontal display can be shifted right/left.
- The horizontal/vertical sync input can be used intact regardless of the difference in pulse polarity and pulse width.
- The AFC feedback sawtooth wave can be obtained by simply applying a flyback pulse to the IC as a trigger pulse.
- Any duty of the horizontal pulse can be set.
- Good linearity because DC bias at vertical output stage is subjected to sampling control within retrace time.

On-chip Functions

[Horizontal Block]
- AFC
- Horizontal OSC
- X-ray protector
- Horizontal phase shift
- AFC sawtooth wave generator
- Horizontal pulse duty setting

[Vertical Block]
- Vertical OSC
- Vertical sawtooth wave generator
- Sampling type DC voltage control

Package Dimensions
(unit:mm)
3021B



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Maximum Ratings at Ta = 25°C

				unit
Maximum Supply Voltage	V_{10},V_{20} max		14	V
Allowable Power Dissipation	P_d max	Ta≦65°C	780	mW
Operating Temperature	Topr		−20 to +85	°C
Storage Temperature	Tstg		−55 to +125	°C

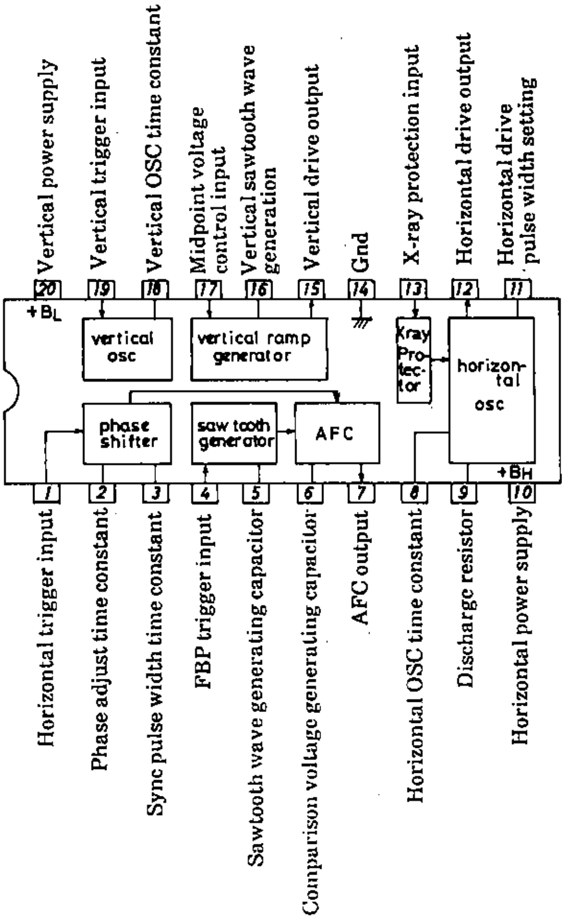
Operating Conditions at Ta = 25°C

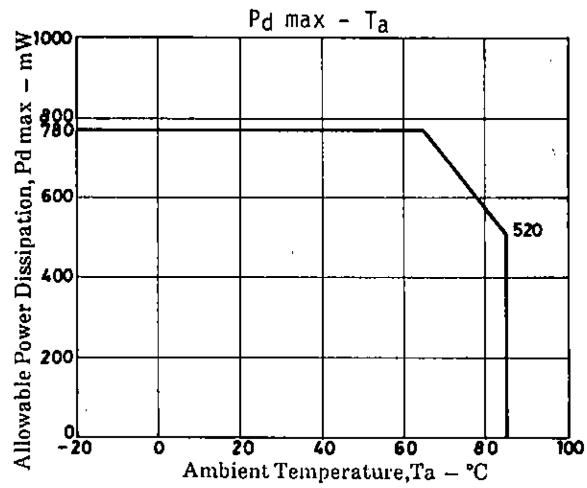
			unit
Recommended Supply Voltage	V_{10},V_{20}	12.0	V
Operating Voltage Range	V_{10},V_{20} op	9 to 13.5	V
Recommended Vertical Pulse Input Peak Value	V_{PULSE}	5.0	Vp-p
Operating Vertical Pulse Input Peak Value Range	V_{PULSE}	2.0 to 6.0	Vp-p
Recommended Horizontal Pulse Input Peak Value	H_{PULSE}	5.0	Vp-p
Operating Horizontal Pulse Input Peak Value Range	H_{PULSE}	2.0 to 6.0	Vp-p

Operating Characteristics at Ta = 25°C, V_{11}, V_{22} = 12V

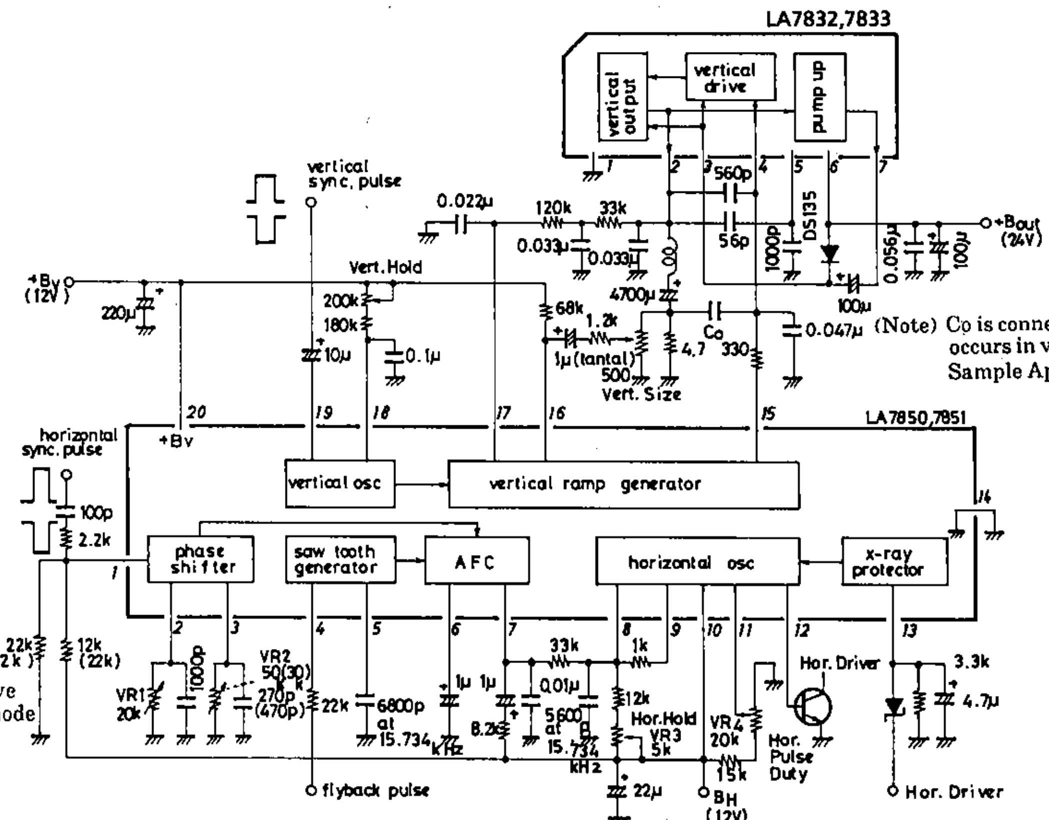
			min	typ	max	unit
V_{CC10} Current Dissipation	I_{10}		12		30	mA
V_{CC20} Current Dissipation	I_{20}		5		12	mA
Vertical Frequency Pull-in Range	$V_{P\,IN}$	Vertical sync 60Hz	21.0		23.0	Hz
Vertical Free-running Frequency	f_V	f_V center 55Hz	50		60	Hz
Increased/Reduced Voltage Characteristic of Vertical Frequency	Δf_{VV}	V_{22} = 12±1V, 55Hz at 12V	−0.1		0.1	Hz
Midpoint Control Threshold Level			3.8		4.4	V
Vertical OSC Start Voltage	$f_{V,st}$				4.0	V
Temperature Characteristic of Vertical Frequency		Ta = −10 to +60°C	−0.028		0.028	Hz/°C
Vertical Driver Amplification Factor	G_V		12		18	dB
Horizontal AFC DC Loop Gain	I_{AFC}		±0.85		±1.6	mA
Horizontal Free-running Frequency	f_H	f_H center 15.734kHz	−750		750	Hz
Horizontal OSC Start Voltage	$f_{H,st}$				4.0	V
Increased/Reduced Voltage Characteristic of Horizontal Frequency	$\Delta f_{H,V}$	V_{11} = 12±1V, 15.734kHz at 12V	−50		50	Hz
Horizontal OSC Warm-up Drift	Δf_H	5s. to 30min. after application of power	−50		50	Hz
Temperature Characteristic of Horizontal Frequency		Ta = −10 to +60°C	−2.9		2.9	Hz/°C
Horizontal Output Drive Current	I_{12}		6.0		12.0	mA
Increased/Reduced Voltage Characteristic of Phase Shifter Delay Time		V_{10} = 12±1V	−0.5		0.5	%/V
Temperature Characteristic of Phase Shifter Delay Time		Ta = −10 to +60°C	−0.1		0.1	%/°C
Increased/Reduced Voltage Characteristic of Phase Shifter Delay Time		V_{10} = 12±1V	−1.0		1.0	%/V
Temperature Characteristic of Phase Shifter Pulse Width		Ta = −10 to +60°C	−0.13		0.13	%/°C
AFC Phase Comparison Center Time		15.734kHz after F.B.P. input	9.9		11.5	μs
Increased/Reduced Voltage Characteristic of AFC Phase Comparison Center Time		V_{10} = 12±1V	−1.5		1.5	%/V
Temperature Characteristic of AFC Phase Comparison Center Time		Ta = −10 to +60°C	−0.2		0.2	%/°C
Comparison Waveform Generating Input Operation Voltage	V_4		0.6		0.9	V
Pin 13 Voltage at Hold-down Operation Start	V_{13}		0.5		0.8	V

Equivalent Circuit Block Diagram





Sample Application Circuit: 14" Color Monitor/$f_V = 60Hz$, $f_H = 15.734kHz$



(Note) Co is connected when oscillation occurs in vertical output in Sample Application Circuit.

( ): Negative pulse mode

VR2 is fixed after adjustment.

(Note) For the LA7350, the vertical pull-in range is 10Hz at vertical sync 60Hz.

Unit (resistance:Ω, capacitance:F)

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